

PLEXIGLAS® 6N PMMA

Röhm GmbH

Productprofil:

PLEXIGLAS® 6N is an amorphous thermoplastic molding compound (PMMA).

Typical properties of PLEXIGLAS® molding compounds are:

- good flow
- high mechanical strength, surface hardness and mar resistance
- high light transmission
- excellent weather resistance
- free colorability due to crystal clarity.

The special properties of PLEXIGLAS® 6N are:

- very good mechanical properties
- high heat deflection temperature
- excellent flow / melt viscosity

Application:

Particularly suitable for injection molding optical and technical items.

Example:

optical waveguides, luminaire covers, automotive lighting, instrument cluster covers, optical lenses, displays, cuvettes, medical applications etc.

Processing:

PLEXIGLAS® 6N can be processed on injection molding machines with 3-zone general purpose screws for engineering thermoplastics.

Physical Form / Packaging:

PLEXIGLAS® molding compounds are supplied as pellets of uniform size, packaged in 25kg polyethylene bags or in 500kg boxes with PE lining; other packaging on request.

Rheological properties	Value	Unit	Test Standard
ISO Data			
Melt volume-flow rate, MVR	12	cm ³ /10min	ISO 1133
Temperature	230	°C	-
Load	3.8	kg	-

Mechanical Properties	Value	Unit	Test Standard
ISO Data			
Tensile Modulus	3200	MPa	ISO 527
Stress at Break	67	MPa	ISO 527
Strain at Break	3	%	ISO 527
Tensile Creep Modulus, 1h	2600	MPa	ISO 899-1
Tensile Creep Modulus, 1000h	2200	MPa	ISO 899-1
Impact Strength (Charpy), +23°C	20	kJ/m ²	ISO 179/1eU

Thermal Properties	Value	Unit	Test Standard
ISO Data			
Glass Transition Temperature (10°C/min)	99	°C	ISO 11357-1/-2
Temp. of deflection under load (1.80 MPa)	90	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa)	95	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	96	°C	ISO 306

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Coeff. of Linear Therm. Expansion, parallel	80	E-6/K	ISO 11359-1/-2
Burning Behav. at 1.5 mm Nom. Thickn.	HB	class	UL 94
Thickness tested	1.6	mm	-
UL recognition	yes	-	-
Oxygen index	17.2	%	ISO 4589-1/-2

Electrical Properties	Value	Unit	Test Standard
ISO Data			
Relative permittivity, 100Hz	3.7	-	IEC 62631-2-1
Relative permittivity, 1MHz	2.9	-	IEC 62631-2-1
Dissipation Factor, 100Hz	500	E-4	IEC 62631-2-1
Dissipation Factor, 1MHz	200	E-4	IEC 62631-2-1
Volume Resistivity	>1E13	Ohm*m	IEC 62631-3-1
Surface Resistivity	1E13	Ohm	IEC 62631-3-2
Comparative tracking index	600	-	IEC 60112

Other Properties	Value	Unit	Test Standard
ISO Data			
Water Absorption	1.8	%	Sim. to ISO 62
Humidity absorption	0.6	%	Sim. to ISO 62
Density	1190	kg/m³	ISO 1183

Material Specific Properties	Value	Unit	Test Standard
ISO Data			
Viscosity number	53	cm³/g	ISO 307, 1157, 1628
Luminous transmittance	92	%	ISO 13468-1, -2

Rheological calculation properties	Value	Unit	Test Standard
ISO Data			
Density of melt	1060	kg/m³	-
Thermal Conductivity of Melt	0.181	W/(m K)	-
Spec. heat capacity of melt	2440	J/(kg K)	-
Eff. thermal diffusivity	6.99E-8	m²/s	-
Ejection temperature	75	°C	-

Test specimen production	Value	Unit	Test Standard
ISO Data			
Processing conditions acc. ISO	8257	-	ISO-2
Injection Molding, melt temperature	236	°C	ISO 294
Injection Molding, mold temperature	56	°C	ISO 294
Injection Molding, injection velocity	195	mm/s	ISO 294

Processing Recommendation Injection Molding	Value	Unit	Test Standard
Pre-drying - Temperature	85	°C	-
Pre-drying - Time	2 - 3	h	-
Melt temperature	220 - 260	°C	-
Mold temperature	60 - 90	°C	-

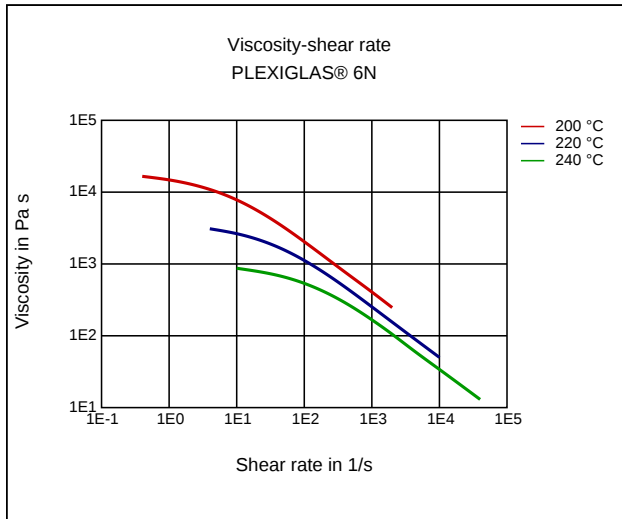
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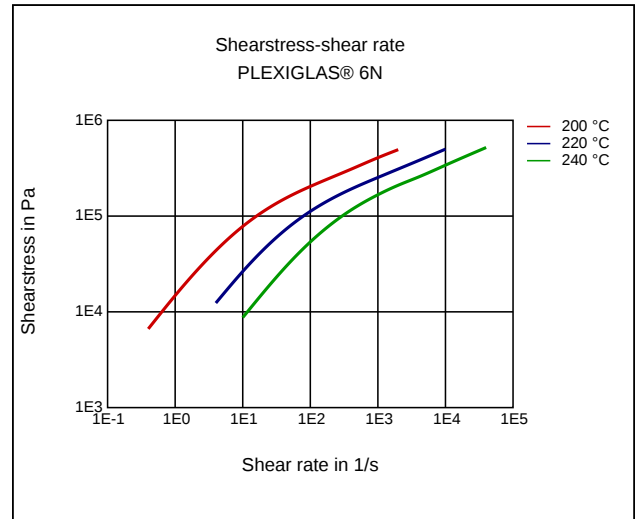
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Diagrams

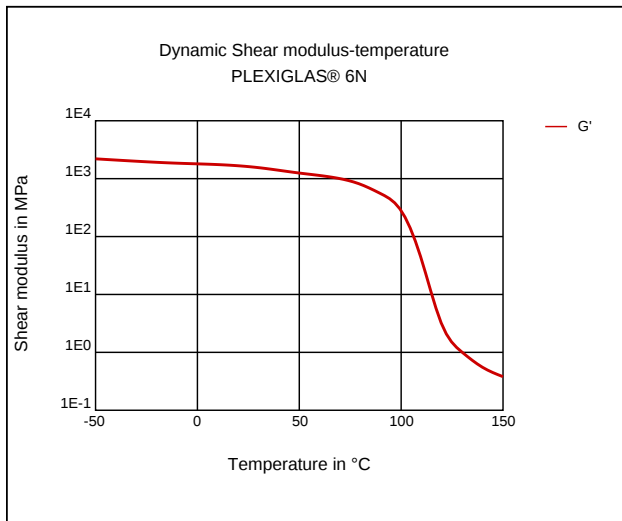
Viscosity-shear rate



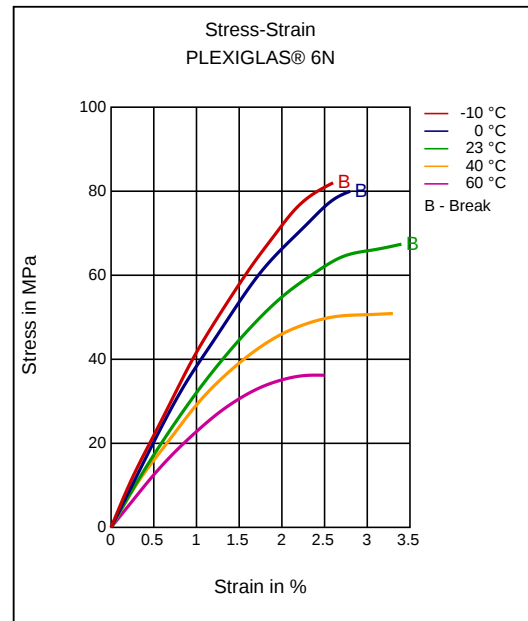
Shearstress-shear rate



Dynamic Shear modulus-temperature



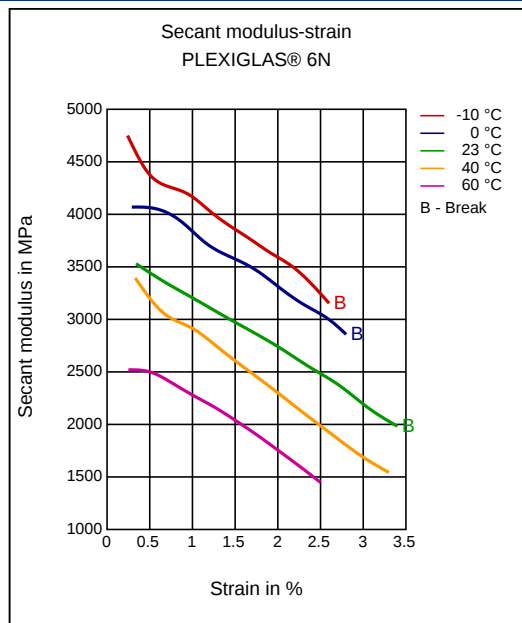
Stress-strain



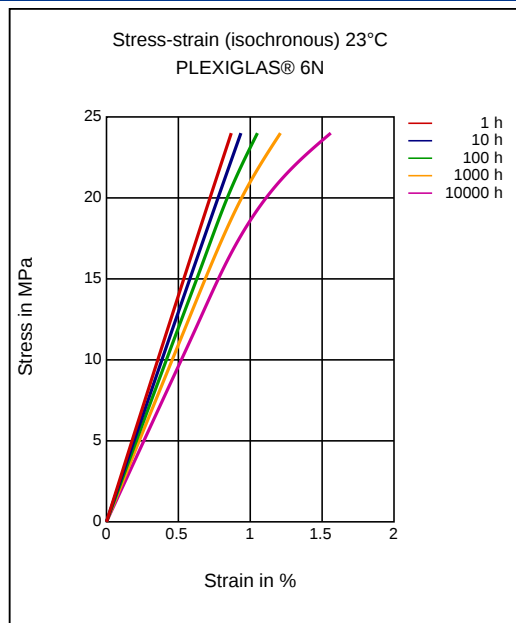
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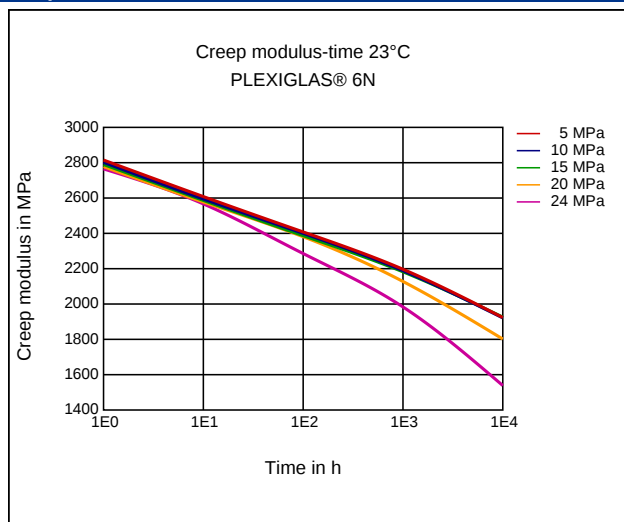
Secant modulus-strain



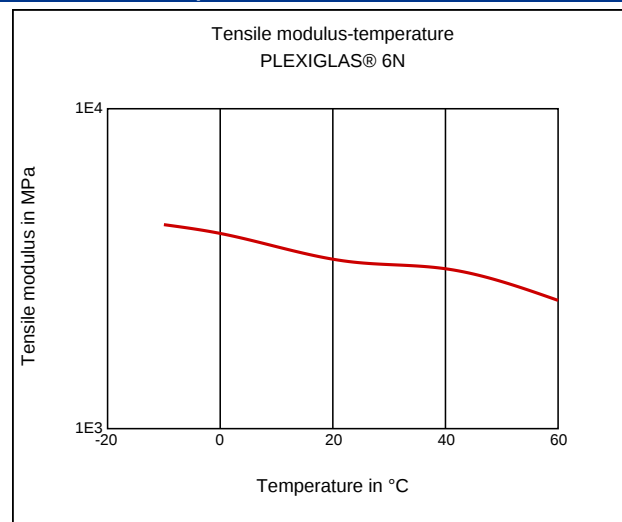
Stress-strain (isochronous) 23 °C



Creep modulus-time 23 °C



Tensile Modulus-Temperature



Characteristics

Processing

Injection Molding

Delivery form

Pellets

Additives

Release agent

Special Characteristics

Light stabilized or stable to light, UV stabilized, Transparent

Features

Amorphous

Applications

Automotive, Medical

Injection Molding

PREPROCESSING

Predrying temperature: max. 85 °C

Predrying time in a desiccant-type drier: 2 - 3 h

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PROCESSING

Melt temperature: 220 - 260 °C

Mold temperature: 60 - 90 °C

Chemical Media Resistance

Acids

- ✓ Citric Acid solution (10% by mass) (23 °C)
- ✓ Lactic Acid (10% by mass) (23 °C)
- ✓ Nitric Acid (40% by mass) (23 °C)
- ✓ Sulfuric Acid (38% by mass) (23 °C)
- ✓ Sulfuric Acid (5% by mass) (23 °C)

Bases

- ✓ Sodium Hydroxide solution (35% by mass) (23 °C)
- ✓ Sodium Hydroxide solution (1% by mass) (23 °C)
- ✓ Ammonium Hydroxide solution (10% by mass) (23 °C)

Hydrocarbons

- ✓ n-Hexane (23 °C)
- ✓ iso-Octane (23 °C)

Standard Fuels

- ✓ Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23 °C)
- ✓ Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23 °C)
- ✓ Diesel fuel (pref. ISO 1817 Liquid F) (23 °C)

Salt solutions

- ✓ Sodium Carbonate solution (20% by mass) (23 °C)
- ✓ Sodium Carbonate solution (2% by mass) (23 °C)

Other

- ✓ 50% Oleic acid + 50% Olive Oil (23 °C)
 - ✓ Water (23 °C)
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